

Development and testing of microprocessor-based systems is difficult and requires a different set of tools. The μ SA is different and needs to be seen to be appreciated. Call your local Millennium Sales Rep or Millennium to schedule a demonstration in your plant and on your system.

☐ Please call me to schedule a demonstration.

☐ I don't have an immediate need, but put me on Millennium's mailing list.

My primary area of involvement with microprocessors is:

☐ Development ☐ Production Test ☐ Field Service

I am currently using in production:

☐ 8080 ☐ 6800 ☐ Z-80 ☐ 8085 ☐ other _____

I am using in new designs:

☐ 8080 ☐ 6800 ☐ Z-80 ☐ 8085 ☐ other _____

Name _____

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Company _____

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MILLENNIUM SYSTEMS INC.

19020 Pruneridge Avenue
Cupertino, CA 95014



MILLENNIUM

μ SA MICROSYSTEM ANALYZER

SUPPORTS MICROPROCESSOR-BASED PRODUCTS FROM DEVELOPMENT TO FIELD SERVICE

The advantages of microprocessors in a product are widely recognized; increased system performance, lower cost, increased reliability and reduced size. But, they also cause major problems in the development lab, production test lines and field service. Why? Because microprocessors are different from previous generations of hardwired logic systems. Microprocessor-based systems are under software control, so expensive development systems are required. Real-time emulation is a must in order to check out hardware and hardware/software integration. In production and field service, the microprocessor introduces the bidirectional bus, disappearing test points, and the need to test at operating clock speeds.

What is required is a development and test tool as different as the microprocessor itself. Millennium Systems, the company leading in emulation and microprocessor support, recognized this and developed the MicroSystem Analyzer (μ SA).

IN THE DEVELOPMENT LAB

Use μ SA's 5 MHz emulation capability to check your hardware and software designs in 8085A, Z80A, 8080A, and 6800 systems.* μ SA is transparent in almost all applications. 8085A and Z80A have DMA capability.

No need to build special test fixtures for each new design since the μ SA can single step, run at full speed and run with display. You can display and alter registers, memory and I/O; set breakpoints, and measure software timing loops — all while your system is running.

The Remote Communications Option permits downloading from your computer or development system (via RS232C) to enable multiple user operation.

ON THE PRODUCTION LINE

Overcome the problems of simulation in conventional test equipment by testing the board and/or system at the system clock rate in the system mechanical, thermal and electrical environment. Or use the μ SA after board test to rapidly and accurately locate node level faults. In-circuit emulation allows semi-skilled operators to do troubleshooting. Test results are displayed on a direct reading, interpretation free display.

Avoid the high cost of bed-of-nails and edge connectors; μ SA plugs into the microprocessor socket and examines all of the analog and digital functions that the microprocessor can see. Since no hardware or firmware is added to your system, μ SA can be used on older systems or systems where HP signature analysis has been designed in.

Troubleshoot totally inoperative systems with the frequency, transition count, pulse width and pulse interval measurement capabilities. Test asynchronous circuits or set-up one shots.

The Remote Communications option permits multiple μ SA test stations to communicate with a host computer.

IN FIELD SERVICE

Reduce the number of good boards or intermittent boards being returned to the factory for repair. Perform board repairs at a depot rather than paying the increasing freight and tariff costs of returning goods and bad boards to the factory.

Perform functional testing at the customer site and verify board swap. At the repair depot, lower skill level technicians can rapidly and accurately find node level faults.

The Remote Communications Option enables remote diagnostic testing and repair via RS232C and/or phone lines.

Millennium recognized that a different development and test technology would be required to support the microprocessor-based system and chose in-circuit emulation and signature analysis. The μ SA is the only test system that employs both techniques.

THE SYNERGY OF IN-CIRCUIT EMULATION AND SIGNATURE ANALYSIS

The μ SA uses in-circuit emulation to provide the signature analysis to the System Under Test (SUT), response of the SUT.

In-circuit emulation operation requires only that a clock functional test

can emulate both SUTs and perform non

For signature analysis circuit emulation to generate. Because page bit source external to proceed e

EASY TO

The diagnostic language processor of the routines required, such as reading or writing to an I/O port, can be copied directly from the existing product software. If there are diagnostics in your system now, they can be modified to operate in the μ SA.

PORTABLE

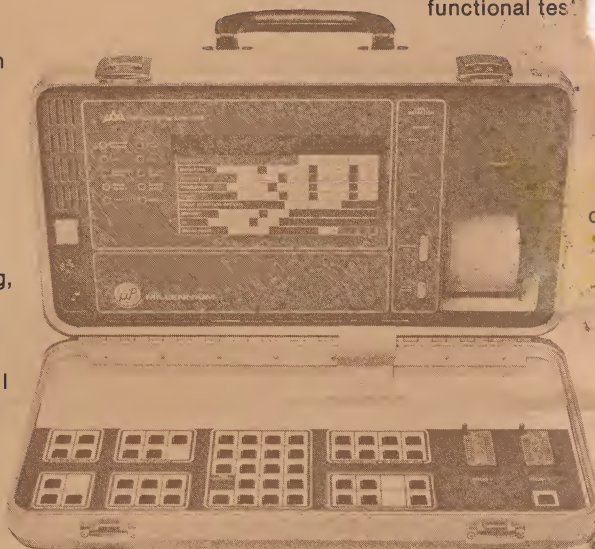
The small enclosure weighs only 21 lbs and is fit under an airline seat.

LOW COST

The MicroSystem Analyzer sells for less than \$6000,** including one emulator to support 8080, 6800, Z80A or 8085 and the signature analysis, fault-finding option.

*8048 family and 6802 coming soon.

**Domestic single unit price.



A universal emulator and functional test system for 8085A, Z80A, 8080A and 6800-based systems.*



MILLENNIUM SYSTEMS INC.

19020 PRUNERIDGE AVE., CUPERTINO, CA 95014

TELEPHONE: (408) 996-9109 TWX/TELEX # 910-338-0256

Leadership in Microprocessor Instrumentation

EMERGENCY

AID

For Microprocessor Users . . .

Now that you're using microprocessors, you know that the design, testing and maintenance of microprocessor systems is different and more difficult than previous hardwired systems.

Finally, one company has addressed the unique needs of the microprocessor user . . .

MicroSystem Analy

MicroSystem Emulator

Model Number	Description	Quantity 1-9	Model Number	Description	Quantity 1-9
uSA Series 4000	MicroSystem Analyzer Main Unit* with Signature Analysis without emulator	\$ 3450.00	uSE Series 4000	MicroSystem Designer Main Unit* without personality module, with 1 kilobit RAM	\$ 990.00
EM6800	6800 In-circuit Emulator	\$ 1150.00	SM6800	6800 In-circuit Emulator	\$ 1150.00
EM8080	8080 In-circuit Emulator	\$ 1150.00	SM8080	8080 In-circuit Emulator	\$ 1150.00
EMZ80	Z80A In-circuit Emulator	\$ 1725.00	SMZ80	Z80 In-circuit Emulator	\$ 1725.00
EM8085	8085 In-circuit Emulator	\$ 1725.00	SM8085	8085 In-circuit Emulator	\$ 1725.00
EM8021	8021 In-circuit Emulator	\$ 1725.00	SM8021	8021 In-circuit Emulator	\$ 1725.00
EM6802	6802 In-circuit Emulator	\$ 1725.00	SM6802	6802 In-circuit Emulator	\$ 1725.00
PM6802	6802 pod only	\$ 920.00			
EM8048	8048 In-circuit Emulator	\$ 2000.00	SM8048	8048 In-Circuit Emulator	\$ 2000.00
COMM-1	RS232C Communications option, including 8K RAM	\$ 1725.00	SMRTT	Real-Time Trace Module	\$ 2000.00
Option 1A	2-2708 (1K x 8) PROM sockets	N/C	Option 1A	2-2708 (1K x 8) PROM socket	N/C
Option 1B	2-2716 (2K x 8) PROM sockets	N/C	Option 1B	2-2716 (2K x 8) PROM socket	N/C
			Option 1B	extra 1 kilowords RAM (2 kilobytes) factory installed (for 16-bit processors)	\$ 150.00

* Must be ordered with emulator card

*Must be ordered with emulator card

*Must be ordered with personality module

NOTE:

1. All costs are FOB Cupertino, California.
2. Prices are subject to change without notice.

"Millennium's products are designed to support a variety of different microprocessors including types which will become available in the future. At the time a new processor is supported, appropriate product lines will have been enhanced to accept these emulators or personality modules. In the case of previously purchased product lines, Millennium commits to provide an enhancement update program at a minimal cost to our customers."

DOMESTIC PRICE LIST

JANUARY 1, 1980

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